MAH4X4

HDMI 4x4 Matrix Switcher with Full 3D Support

User Manual

Here for You 24/7!
1-888-861-7351

SAFETY AND NOTICE

Our **MAH4X4** has been tested for conformance to today's safety regulations and requirements and has been certified for international use. Please be careful though because just like any other electronic device; the **MAH4X4** should be used with care. Please read and follow the safety instructions to protect yourself from possible injury and to reduce the risk of damage to the unit.

- Follow all instructions and warnings marked on this unit
- Do not attempt to service this unit yourself, except where explained in this manual
- Provide proper ventilation and air circulation and do not use near water
- Keep objects a safe distance away from your device and assure that the placement of this unit is on a stable surface
- Use only the power adapter, power cords and connection cables designed for this unit
- Do not use liquid or aerosol cleaners to clean this unit. Always unplug the power to the device before cleaning

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INTRODUCTION

The ZuumMedia **MAH4X4** provides the most reliable and cost effective solution in the market to switch high definition video plus multi-channel (up to 7.1-channel) digital audio from any of the four HDMI sources to the remote displays at the same time. Simple and easy setup with auto signal equalization and amplification (no dipswitches or dials to adjust) ensures the best possible picture quality and sound transmission. This is a perfect solution to use in home theaters, conference or presentation rooms, schools, commercial and retail environments or wherever you need HDTV distribution.

FEATURES

- Supports high resolution video up to 1080p@60Hz or 1920X1200
- Deep Color (36bit) support and 3D
- HDCP compliant
- View any HDMI source on one or more displays at the same time
- Supports LPCM, Dolby AC3, TrueHD, DTS-HD
- EDID management, default, learn and auto EDID from displays
- HDMI outputs can be switched to any HDMI inputs by using the front panel buttons, IR remote control, RS-232 and Ethernet control
- Easy installation, includes ears for rack-mounting and wall-mounting
- Fast response time, 2 to 5 seconds per channel switch
- Firmware upgradeable

PACKAGE CONTENTS

- MAH4X4
- IR Receiver
- 5VDC 4A Power Supply
- IR Remote Control
- Rack-Mounting ear set
- User Manual

SPECIFICATIONS

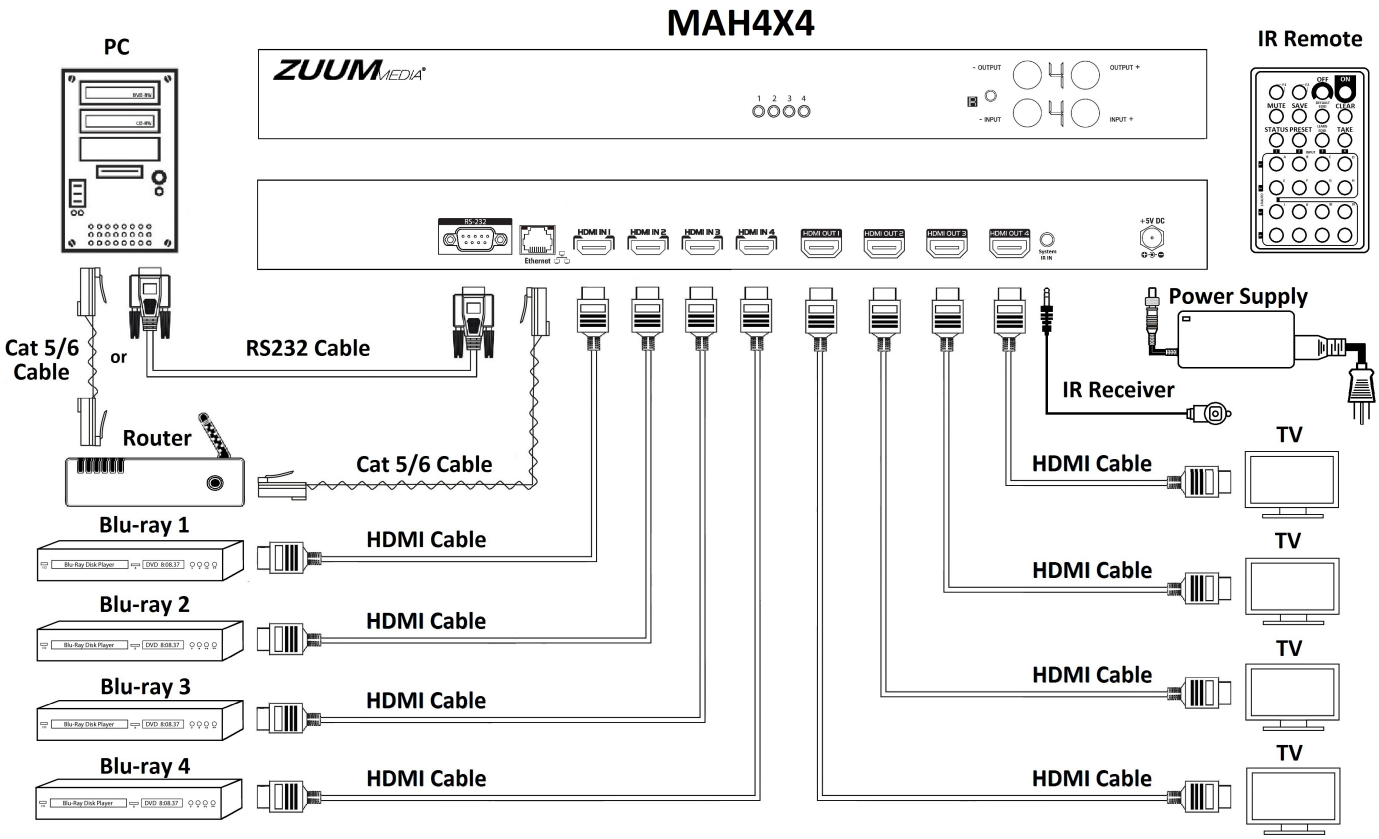
Model:	MAH4X4
Technical	
Product type	True 4x4 matrix
HDMI compliance	HDMI Deep Color & full 3D
HDCP compliance	Yes
Video bandwidth	Single-link 225MHz [6.75Gbps]
Video support	480i / 480p / 720p / 1080i / 1080p60 36-bit color
Audio support	Surround sound (up to 7.1ch) or stereo digital audio
ESD protection	[1] Human body model — ±19kV [air-gap discharge] & ±12kV [contact discharge] [2] Core chipset — ±8kV
PCB stack-up	4-layer board [impedance control — differential 100Ω; single 50Ω]
Input	4x HDMI / 1x RS-232 / 1x Ethernet / 1x IR socket for IR receiver
Output	4x HDMI
HDMI Input selection	Push-in button / IR remote control / RS-232 control / Ethernet control
IR remote control	Electro-optical characteristics: p = 25° / Carrier frequency: 38kHz
HDMI connector	Type A [19-pin female]
RJ-45 connector	WE/SS 8P8C with 2 LED indicators
RS-232 connector	DE-9 [9-pin D-sub female]
3.5mm connector	**[System IR]** Receives IR commands from remote control
Mechanical	
Enclosure	Metal case
Temperature	Operation: 32 to 104°F, Storage: -4 to 140°F, Humidity: up to 95%
Dimensions	17.3"(h) x 5.7"(w) x 1.7"(d)
Weight - lbs	2.91
Mounting	1U rack-mounting ears and wall hanging holes
Power supply	5VDC 4A
Power consumption	20 Watts (Max)

HARDWARE INSTALLATION

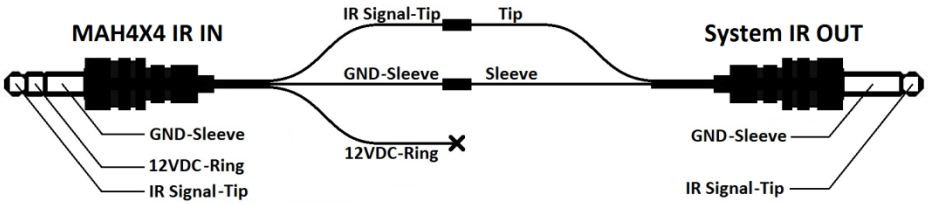
Before installation, please make sure all devices you are connecting are turned off.

1) Connect all sources to HDMI Inputs on the 4x4 HDMI Matrix MAH4X4.
2) Connect all display to HDMI Outputs on the 4x4 HDMI Matrix MAH4X4.
3) Connect the +5V 4A DC power supply to the 4x4 HDMI Matrix MAH4X4.

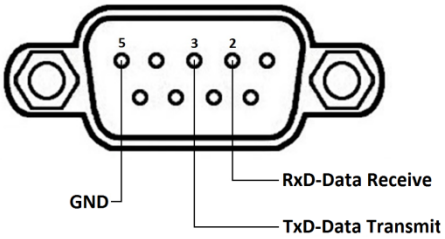
CONNECTION DIAGRAM



Custom Control Cable

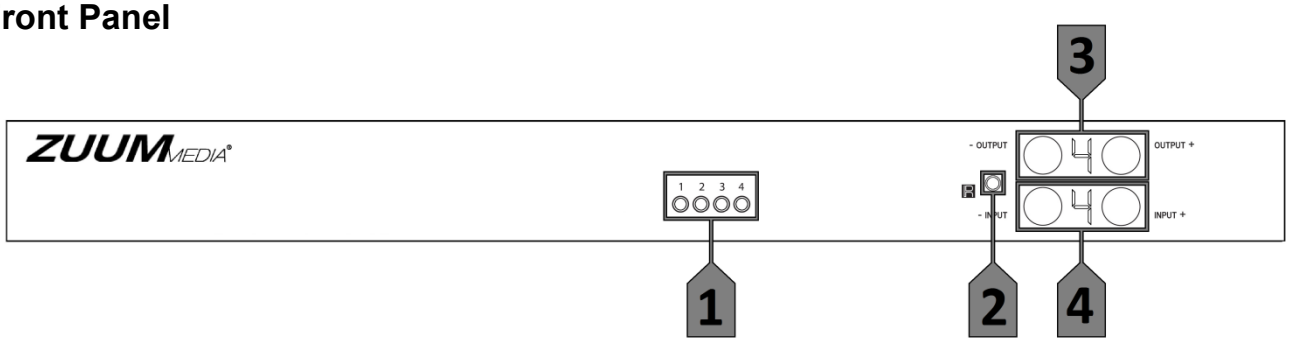


RS-232 DB9 Female



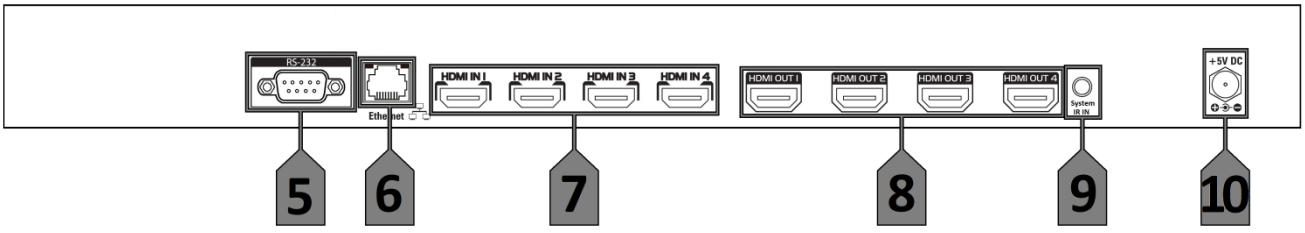
PANEL DESCRIPTIONS

Front Panel



1. **Source Status:** Input source indicator LED
2. **IR SENSOR:** IR sensor for receiving IR commands from IR remote
3. **Output Push Button & 7-segment LED:** Front panel push buttons used to select the number of display channel & LED display for output ports
4. **Input Push Button & 7-segment LED:** Front panel push buttons used to select the number of input source & LED display for input channels

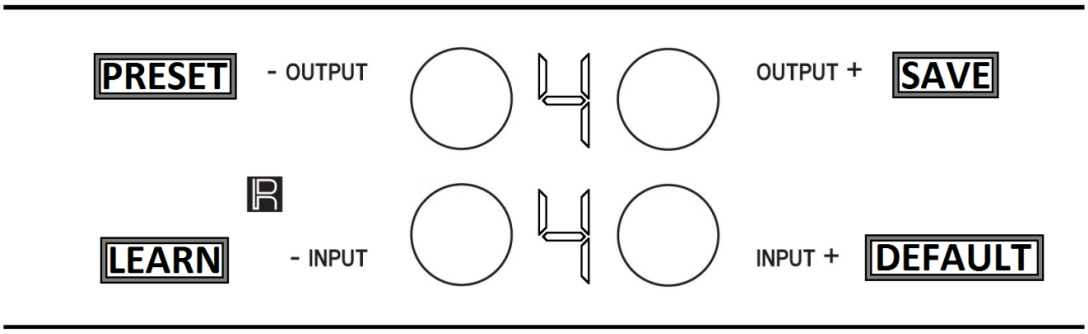
Rear Panel



5. **RS-232:** RS-232 control port
6. **Ethernet:** Ethernet control port
7. **INPUT 1-4:** HDMI inputs
8. **Output 1-4:** HDMI outputs
9. **System IR Receiver:** Ext. IR receiver
10. **+5V DC:** 5V DC power jack

CONTROL & OPERATION

Method A: Push-in Button



1. IN/OUT MAP

1) Use the “+”or “-“ output push button to select the number of display
2) Use the “+”or “-“ input push button to select the number of input source

“+”: change selected input/output port in ascending order

“-” : change selected input/output port in descending order

After you select the desired input/output port, the LED will blink twice and the setting will be effective

2. Save Mapping Mode

1) Keep pushing “output+ (save)”button until the output LED shows “d.” to enter the Save Mapping Mode.
2) Use the “+”or “-“ input push button to select the mapping configuration (1~8) which you want to save current input/output mapping
3) After you select the desired mapping configuration number, the LED will blink twice and the mapping setting will be saved
4) If you push the “output- (preset)”button before the mapping setting is saved, the LED will show “—”“—”to quit the Save Mapping Mode

3. Preset Mapping Mode

1) Keep pushing “output- (preset)”button until the output LED shows “P.” to enter the Preset Mapping Mode.
2) Use the “+”or “-“ input push button to select the saved mapping configuration (1~8) which you want to recall
3) After you select the desired mapping configuration number, the LED will blink twice and the mapping setting will be effective
4) If you push the “output+ (save)”button before the mapping setting is effective, the LED will show “—”“—”to quit the Preset Mapping Mode

4. Default EDID Mode

1) Push “input+ (default)”button to select the input channel which you want to learn default EDID and then keep pushing “input+ (default)”button when you select your desired input channel
2) Push the “+”or “-” output push button and then the LED will show “E”“d” one time to enter Learn Default EDID Mode
3) Use “+”or “-” output push button to select the default EDID mode(1~8)
4) Release “input+ (default)”button after selecting the desired default EDID mode, and then the LED will blink twice and the setting will be effective
5) It will quit the Learn Default EDID Mode if you push the “input- (learn)”button before the setting is effective
6) The LED will show “0”“0” if the setting is successful

   The LED will show “F”“F” if the setting has failed

5. EDID Learning Mode

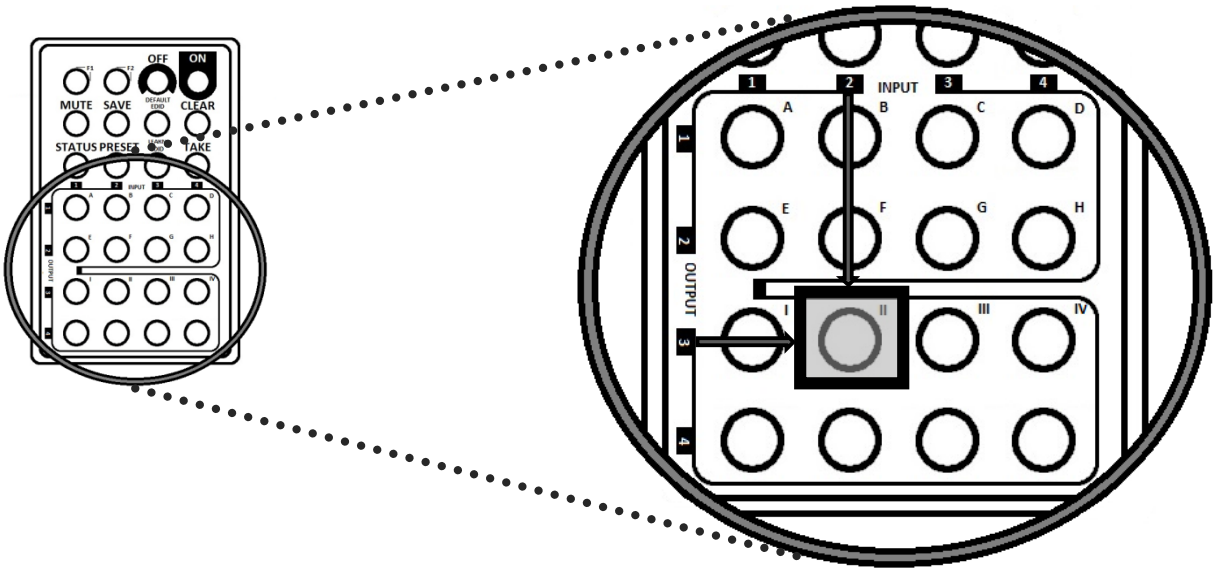
1) Push “input-(learn)”button to select the input channel which you want to learn EDID from HDMI output and then keep pushing “input-(learn)”button when you select your desired input channel
2) Push the “+”or “-” output push button and then the LED will show “E”“L” one time to enter Learn Output EDID Mode
3) Use “+”or “-” output push button to select the output port number
4) Release “input-(learn)”button after selecting the desired output port number, and then the LED will blink twice and the setting will be effective
5) It will quit the Learn Output EDID Mode if you push the “input+ (default)”button before the setting is effective
6) The LED will show “0”“0” if the setting is successful

   The LED will show “F”“F” if the setting has failed

Method B: IR Remote Control

1. IN/OUT Switch

Push the button on IR Remote to select the correct Input to Output.



Example: Connecting Input 2 to Output 3

Push the highlighted button to link Input 2 to Output 3.

2. Function Key

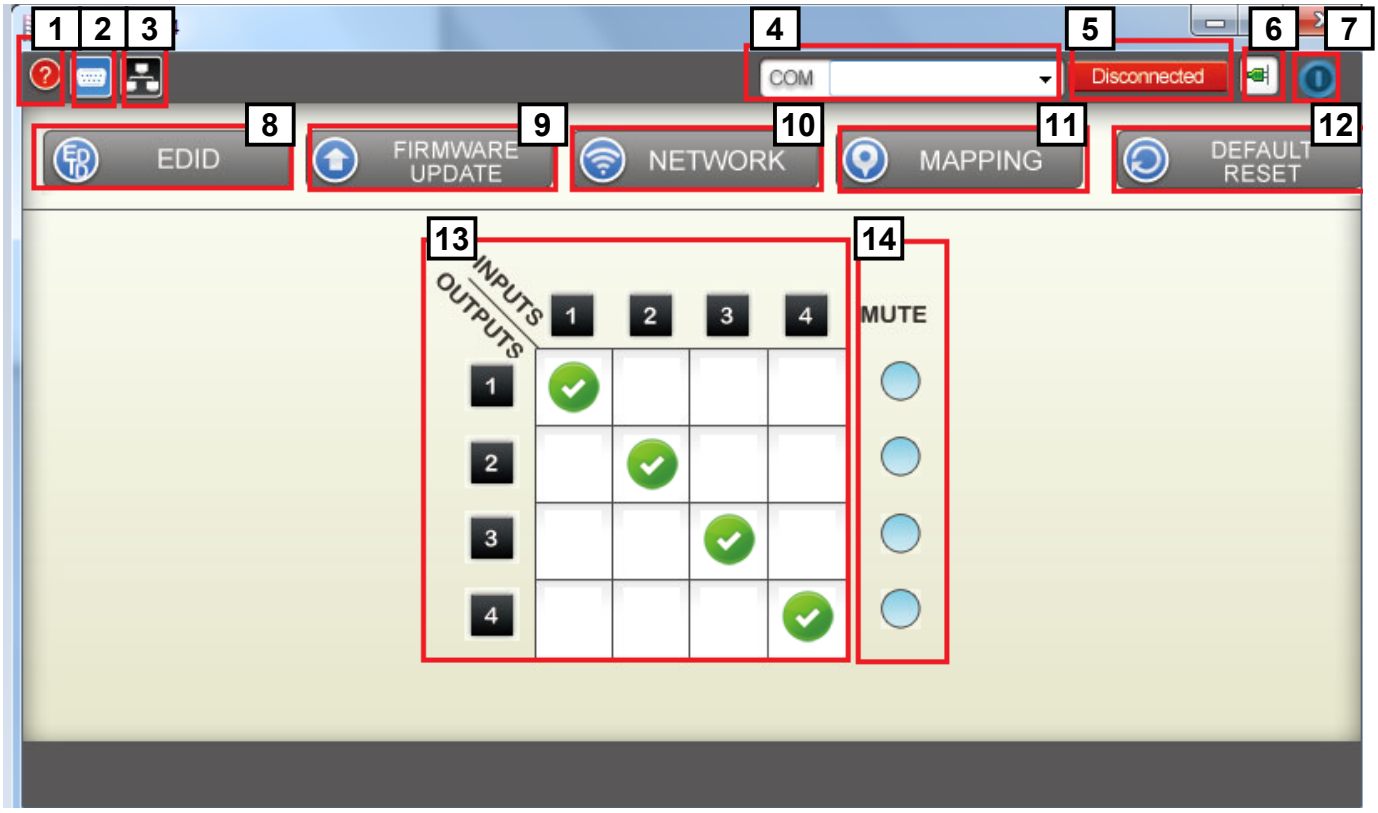
Button	Function
OFF	Standby mode
ON	Power on the matrix switcher
MUTE	Turn off output's video and audio
STATUS	Preset output status
SAVE	Save current mapping mode
PRESET	Preset mapping mode
DEFAULT EDID	Begin default EDID selection
LEARN EDID	Begin EDID learning from one output
CLEAR	Clear the previous IR operation procedure
TAKE	Trigger the previous setting
F1	Reserved
F2	Reserved

Operation	Procedure	7-Segment LED
Mute Output	**Mute + A~D(Output 1~4) + Take**	
Ex: Mute Output 3	1. Press “MUTE” button	**-** **0**
	2. Press number key “C” to select Output 3	**3** **0**
	3.Press “TAKE” button	**3** **0**
Output Status	**Status + A~D(Output 1~4) + Take**	
Ex: Output 4 (Input 2)	1.Press “STATUS” button	**-** **-**
	2.Press number key “D” to select Output 4	**4** **-**
	3.Press “TAKE” button	**4** **2**
Save Current Mapping	**Save + A~H(1-8 storage site) + Take**	
Ex: Save current mapping to 5	1.Press “SAVE” button	**d** **-**
	2.Press number key “E” to select the storage site 5	**d** **5**
	3.Press “TAKE” button	
Preset Mapping	**Preset + A~H(1-8 storage site) + Take**	
Ex: Preset saved mapping from 5	1.Press “PRESET” button	**P** **-**
	2.Press number key “E” to select the storage site 5	**P** **5**
	3.Press “TAKE” button	
Learn default EDID	**Default EDID + A~H(1-8 default EDID) +Ⅰ~Ⅳ(input 1~4) + Take**	
Ex: Default EDID 2 Input 3	1.Press “DEFAULT EDID” button	**E** **d**
	2.Press number key “B” to select default EDID 2	**2** **d**
	3.Press number key “Ⅲ” to select Input 3	**2** **3**
	4.Press “TAKE” button	0 0 (success) **F** **F**(fail)
Learn Output EDID	**Learn + A~D(Output 1~4) + Ⅰ ~Ⅳ(input 1~4) + Take**	
Ex: Learn Output 4 Input 3	1.Press “LEARN” button	**E** **L**
	2.Press number key “D” to select Output 4	**4** **L**
	3. Press number key “Ⅲ” to select Input 3	**4** **3**
	4.Press “TAKE” button	0 **F**

Method C: Software Control through RS-232 port / Ethernet port

1. System Requirement

1) OS Information: MS WinXP/7
2) Baud rates: 9600
3) Software size: 3 MB
4) Minimum RAM requirement: 256 MB



1	Version Button for FW/ SW	8	EDID Button
2	RS-232 Button	9	Firmware Update Button
3	Ethernet Button	10	Network Button
4	COM Port Selection	11	Mapping Button
5	Connect/Disconnect Status	12	Default Reset Button
6	Connect Button	13	In/Out Switch Button
7	Power On/Off Button	14	Mute Output Button

2. Connecting matrix and controller

Step1: Use RS-232 cable to connect the RS-232 port on matrix and PC

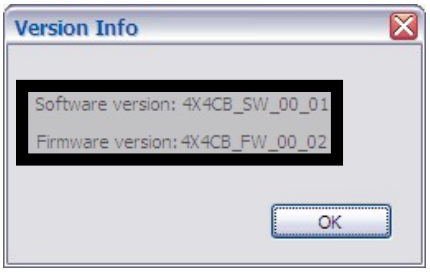
Step2: Open the software and then choose the correct com port

Step3: Click connection button " "

Step4: Make sure the connection status is on connected status "

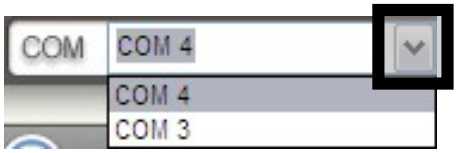
"

3. **FW/SW Version Button**
   Click " " button to show version information



4. **RS-232 B**
   1) Click " " button to switch to RS-232 function.
   2) If RS-2 connected, the button will show the sign image to let you know.
5. **Ethernet Button**
   1) Click " " button to switch to Ethernet function
   2) If Ethernet is connected, the button will show the sign image to let you know.

6. **COM Port Selection**
   Click " " button to select COM Port



7. **Connection Status**

1) Connected Status:

2) Connecting Status:

3) Disconnected Status:

8. **Connect/Disconnect Button**

   Click this button " " to change connection status

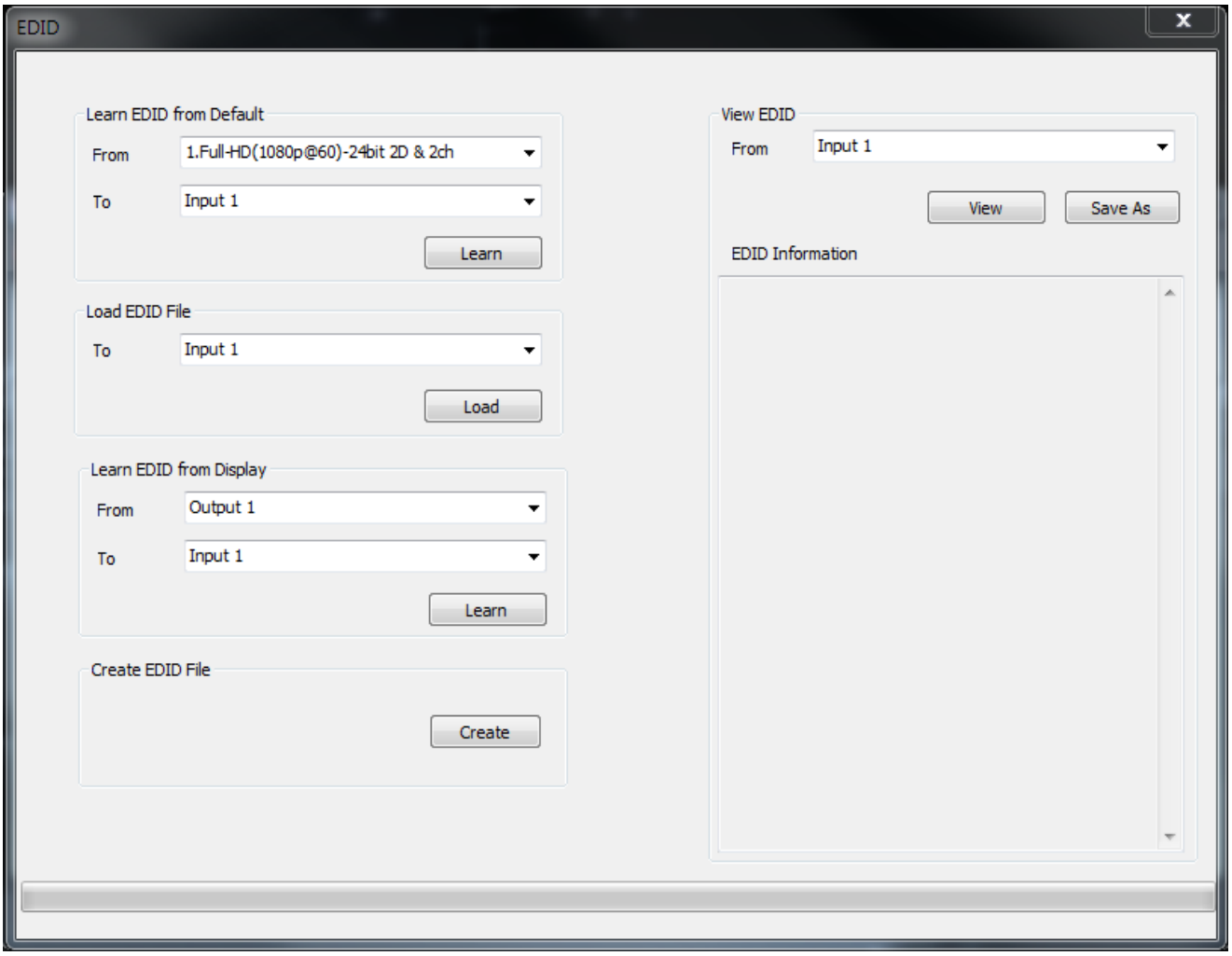
9. Power On/Off Button

Click this button to power on/off

“ ” **Power on status(Blue):** Click this button to power off device(Standby Mode)

“ ” **Power off status(Red):** Click this button to power on device

10. EDID Button



1) Learn EDID from Default

a) Select Default EDID(1-8 Default EDID)

b) Select Input

c) Click “Learn” button to learn default EDID

2) Load EDID File to Input

a) Select Input

b) Click “Load” button to select the EDID file

3) Learn EDID From Display

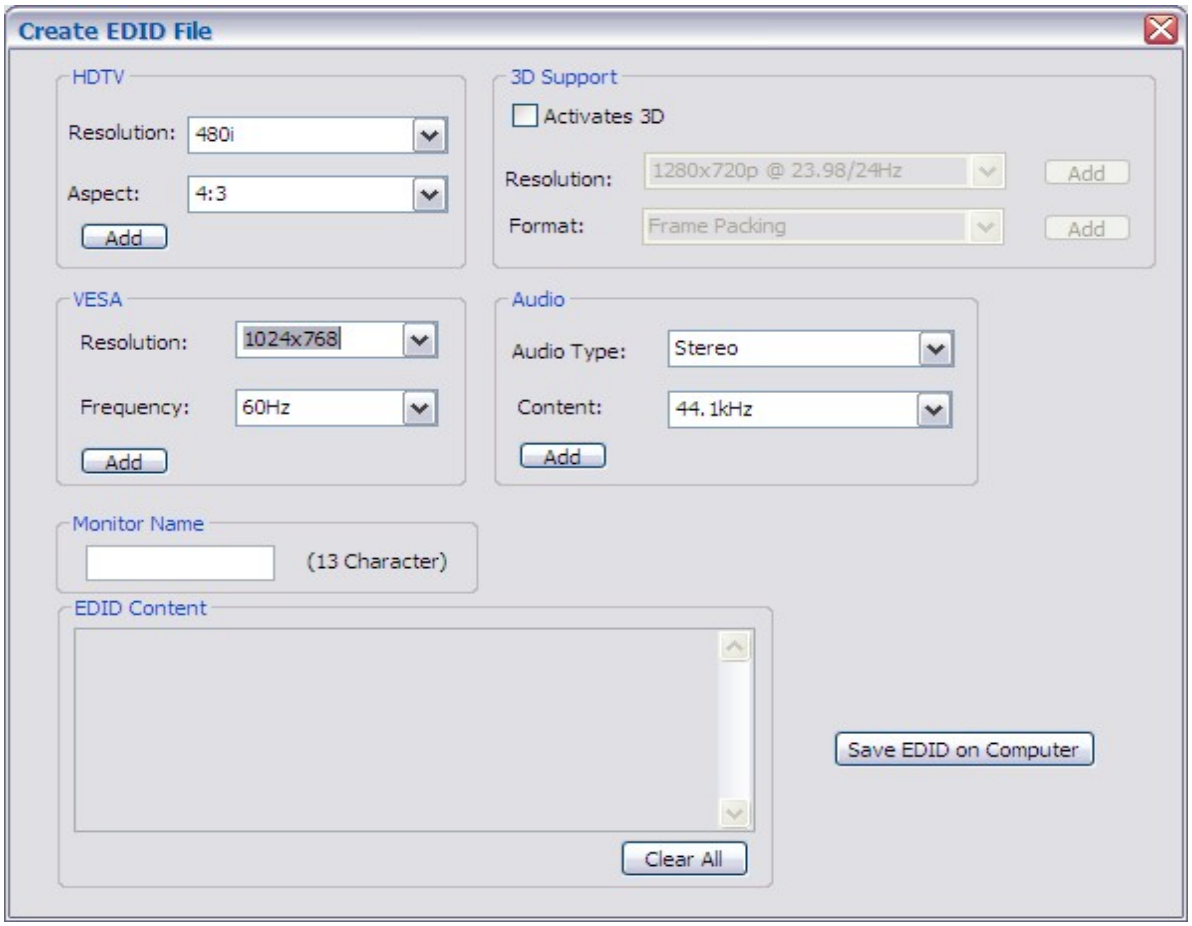
a) Select Output

b) Select Input

c) Click “Learn” button to learn display EDID

4) Create EDID File

a) Click “Create” button to create EDID file



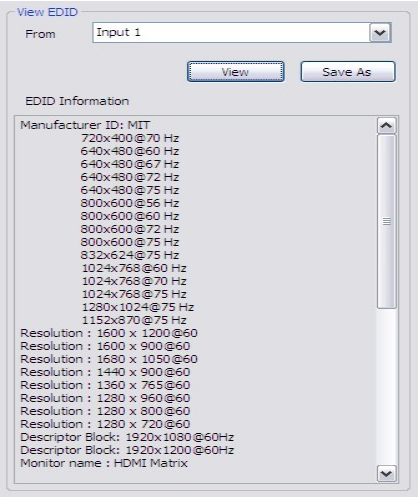
b) Select the EDID content

c) Click “Save EDID on Computer” to save the generated EDID as a file

5) View EDID Content

a) Select Input, HDMI output, or From File

b) Click “View” button to read the EDID and analysis

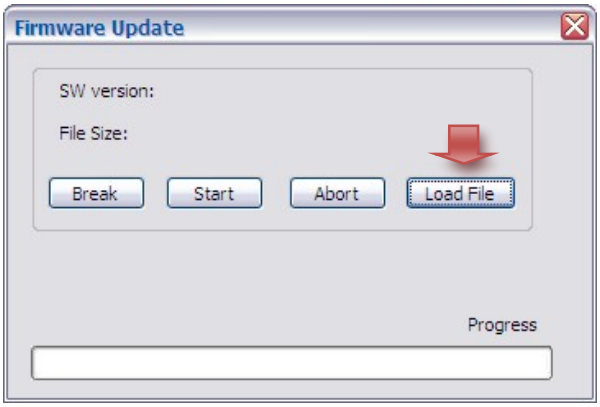


c) Click **“**Save As**”** to save the read EDID as a file on computer

11. Firmware Update Button

Step1: Make sure RS-232 is connecting and the connecting status is “ Connected ”

Step2: Click ”FIRMWARE UPDATE” Button and then will be a pop-up windows



Step3: Click “Load File” to select the firmware file which you want to update

Step4: Click “Break” button

Step5: Quickly pull out and reconnect the power input connector

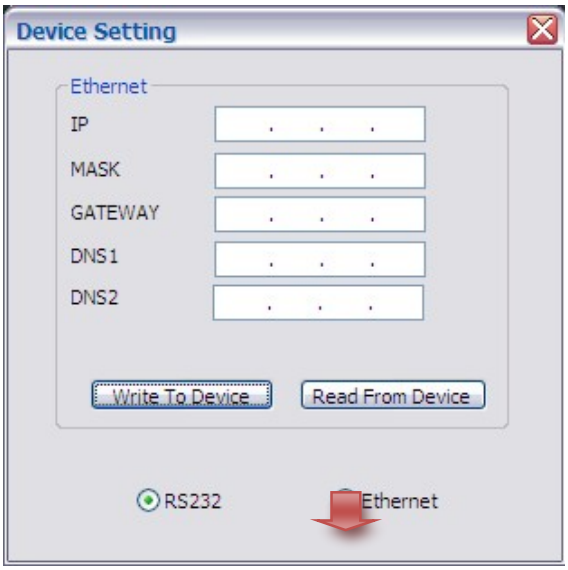
Step6: Click “Start” button and the firmware will start writing

12. Network Button

Step1: Make sure the connection status is on connected status "Connected"

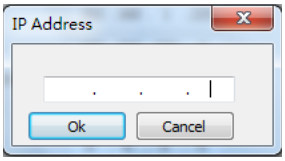
Step2: Connect matrix to network through IP control port

Step3: Click "NETWORK" Button and then will be a pop-up windows



Step4: Click "Read From Device" to read the device IP address

Step5: Select "Ethernet" button and then will be a pop-up windows



Step6: Key in the device IP address to the pop-up windows and click OK

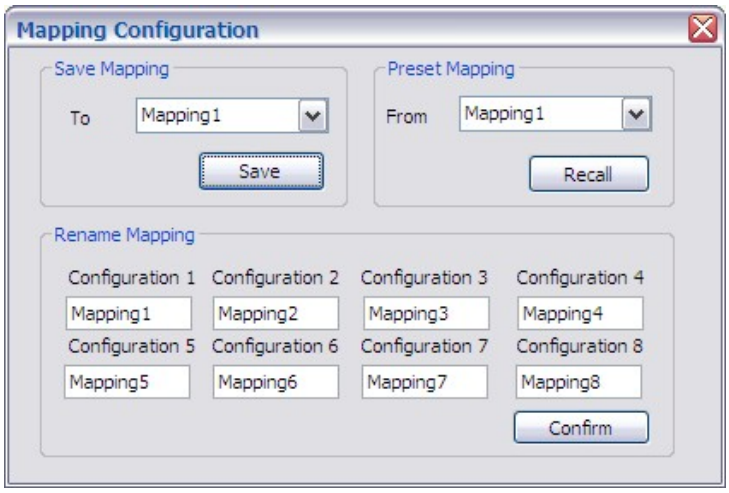
Step7: Click the Connect Button " " to connect then you start control by Ethernet

***Remark: Switch controlling by clicking the shortcut button**

RS-232 Button:
Click the button and then click "Connect Button" to start

Ethernet Button:
Click the button and then click "Connect Button" to start

13. Mapping Button



1) Save Mapping:
   a) Select Mapping(1-8)
   b) Click “Save” button to save current mapping

2) Preset Mapping:
   a) Select Mapping(1-8)
   b) Click “Recall” button to recall previous mapping which are saved

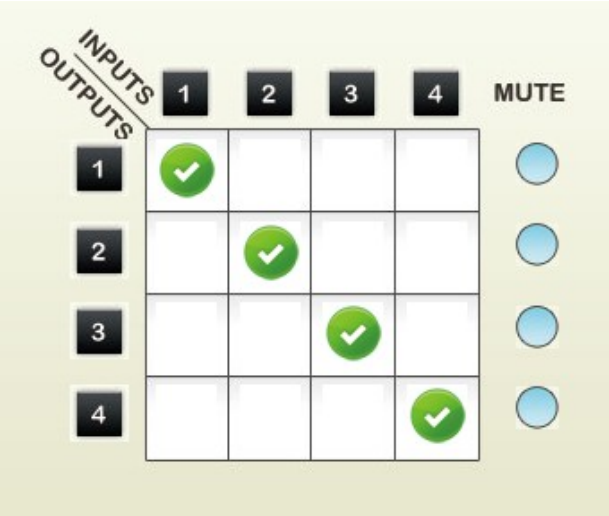
3) Rename Mapping:
   a) Rename the mapping(Mapping1-Mapping8)
   b) Click “Confirm” button to confirm the change

14. Default Reset Button

Click this button to do factory default reset
The default-reset process will take about 80 to 90 seconds

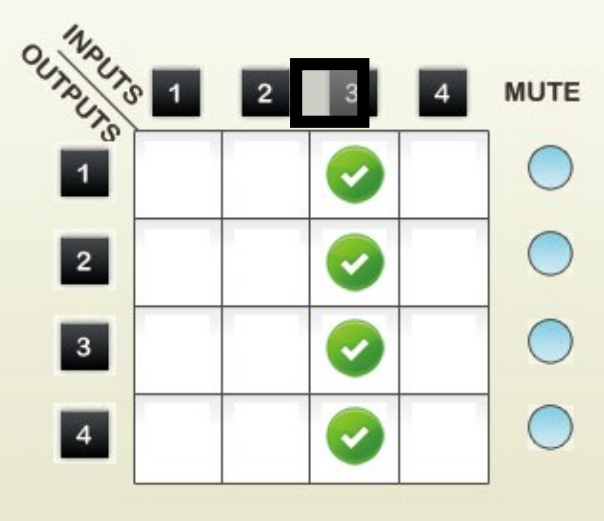
15. In/Out Switch Button

Click the button on the checkerboard to select Input & Output port



User can click the input number button to let all outputs select the same input

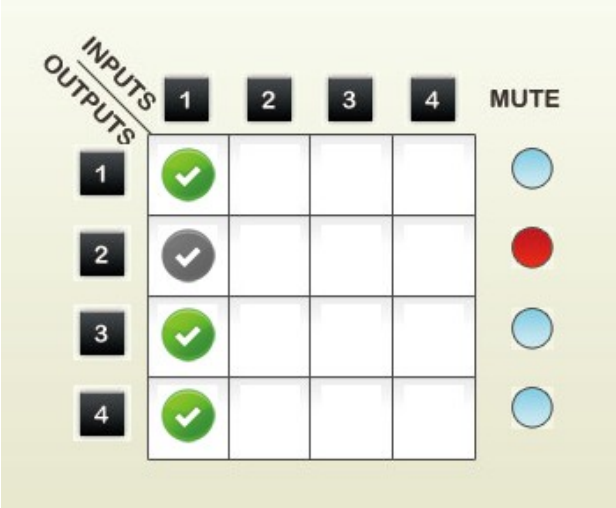
Ex: All outputs select input 3



16. Mute Output Button

Click the circle button to turn off output's video and audio

Ex: Mute Output 2



EDID LEARNING

The EDID learning function is only necessary whenever you encounter any display on the HDMI output port that cannot play audio and video properly. Because the HDMI source devices and displays may have various level of capability in playing audio and video, the general principle is that the source device will output the lowest standards in audio format and video resolutions to be commonly acceptable among all HDMI displays. In this case, a 720p stereo HDMI signal output would be probably the safest choice. Nevertheless, the user can force the matrix to learn the EDID of the lowest capable HDMI display among others to make sure all displays are capable to play the HDMI signals normally.

There are **THREE methods** to do EDID Learning as below,

1. Front Panel Push-in Button: Please refer to the **Control & Operation / Method A: Push-in Button (Page 5.)**
2. IR Remote Control: Please refer to the **Control & Operation / Method B: IR Remote Control (Page 7.)**
3. Software Control: Please refer to the **Control & Operation / Method C: Software Control through RS-232 port / Ethernet port (Page 9.)**

There are **eight embedded default EDID** as below,

1. Full-HD(1080p@60)-24bit 2D & 2ch
2. Full-HD(1080p@60)-24bit 2D & 7.1ch
3. Full-HD(1080p@60)-24bit 3D & 2ch
4. Full-HD(1080p@60)-24bit 3D & 7.1ch
5. HD(1080i@60)(720p@60)-24bit 2D & 2ch
6. HD(1080i@60)(720p@60)-24bit 2D & 7.1ch
7. Full-HD(1080p@60)-36bit 2D & 2ch
8. Full-HD(1080p@60)-36bit 2D & 7.1ch

FAQ

Q Can every TV work with the HDMI matrix?

A *Basically, the answer is YES. But if your TV cannot support 1080p, please refer the EDID LEARNING section to learn EDID from your TV.*

Q What is EDID? Why do I need to learn EDID?

A *EDID contains the whole information of the display such as the resolution and audio setting which this display can support. Therefore, based on the EDID information, media player will pick up the most suitable resolution and audio setting to the display. In order to faithfully transmit the EDID information from display to the media player, learning EDID from display to this device is necessary.*

Q What should I do to learn EDID for the matrix?

A *Due to the limitation of HDMI, the source device can only output one format of video and audio. In other words, the source device cannot output 720p and 1080p video at the same time, or output stereo and surround sound at the same time. Therefore, you may need to manually setup each HDMI input for desirable audio/video output format. The mechanism of EDID Learning is to pick up the HDMI display with the lowest capability among the ones you would use for this input source. For example, if user would like to play the Input-2 upon output-2, output-3 and output-4, and only output-3 cannot support 1080p [support up to 720p only], please learn the EDID from the display connected to the output-3 at the Input-2 port. Of course, if outpt-3 would get the HDMI signals from every HDMI input, please learn EDID information from output3 to all four HDMI inputs. For more information about EDID Learning, please refer to EDID LEARNING section.*

Q My TV can support 1080p, but why is there no audio?

A *factory default EDID of this device is 1080p & 2ch audio. However, there would be a problem after you change to use 1080p & 7.1ch if the TV cannot support 7.1ch audio. Please use the default EDID, 1080p & 2ch audio.*

Q When I connect an audio amplifier (AV receiver) between TV and the matrix to extract 7.1ch audio, why is there no audio?

A *Basically, the default EDID of the chosen input can support 7.1ch audio, but the problem is that the EDID of the amplifier still cannot match the default setting. Therefore, the best method is to learn EDID from the amplifier directly. Please refer to EDID LEARNING section and follow the steps to learn the EDID. When learning EDID from the amplifier, user just needs to connect the matrix and amplifier.*

Q When I play the same content upon multi-displays, why does the TV equipped with an amplifier have 7.1ch audio and the others don't have 7.1ch audio or stereo?

A *Due to the limitation of HDMI, the source only can choose one video and one audio format to play, which can be either 1080p and 7.1ch or 1080p and stereo audio. It means when the user sets the matrix at 1080p and 7.1ch, the source will only play the content under this format. Therefore if the TV cannot decode 7.1ch audio, there is definitely no audio.*

WARRANTY

The **MAH4X4** is guaranteed, free of material and workmanship defects for up to two (2) years from the Date Code by ZuumMedia or an approved authorized dealer. Should this product fail to be in good working condition within two (2) years from the date code, ZuumMedia, at its option, will repair or replace the unit, provided that the unit has not been subjected to abuse, static discharge, power surge or any unauthorized modifications and disassembly. Warranty provided by ZuumMedia to its BUYER is with direct transaction only and warranty is void if the warranty seal on the metal housing is broken.

A unit that fails under conditions other than those covered will be repaired at the current price of parts and labor in effect at the time of repair. Such repairs are warranted for 90 days from the day of reshipment to the BUYER. If the unit is delivered by mail, the customer agrees to insure the unit or assume the risk of loss or damage in transit. Under no circumstances will a unit be accepted without a return authorization number (RA).

The warranty is in lieu of all other warranties expressed or implied, including without limitations, any other implied warranty or fitness or merchantability for any particular purpose, all of which are expressly disclaimed.

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Do You Need Technical Support?

ZuumMedia is proud to offer free technical support to ensure your product is operating correctly.

If you are experiencing difficulties setting up this product, please call us for assistance 1-888-861-7351 or visit www.zuummedia.com for more information.

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